SAFETY DATA SHEET

Aluminum sulphate, solid

Version 5.0 Revision Date 25.01.2018 Print Date 26.01.2018

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name : Aluminum sulphate, solid
REACH Registration Number : 01-2119531538-36

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the Substance/Mixture : Flocculating agent, Pulp chemicals and paper auxiliaries, Agent for water treatment

1.3 Details of the supplier of the safety data sheet

Company : OKER-CHEMIE GMBH
Im Schleeke 77
38642 Goslar
Germany
Telephone : +49(0)5321 751 53415

1.4 Emergency telephone number

E-mail address : infoSDS@hcstarck.com
Responsible Department : Corporate HSEQ
Emergency telephone : +49(0)551/19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)
Serious eye damage/eye irritation, Category 1
H318: Causes serious eye damage.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)
Hazard pictograms :

Signal word : Danger
Hazard statements : H318 Causes serious eye damage.
Precautionary statements :
Prevention: P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response: P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.

2.3 Other hazards

May be corrosive to metals.

SECTION 3: Composition/information on ingredients
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Aluminum sulphate, solid

Version 5.0 Revision Date 25.01.2018 Print Date 26.01.2018

3.1 Substances
Chemical nature : Substance

Hazardous components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminiumsulfatetradecahydrat</td>
<td>16828-12-9</td>
<td>233-135-0</td>
<td>&gt;= 99</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1 Description of first aid measures
If inhaled : Remove to fresh air. If symptoms persist, call a physician.
In case of skin contact : Wash off with soap and water. If skin irritation occurs, seek medical advice/attention.
In case of eye contact : In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
If swallowed : Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Obtain medical attention.

4.2 Most important symptoms and effects, both acute and delayed
Symptoms : No information available.
Risks : No information available.

4.3 Indication of any immediate medical attention and special treatment needed
Treatment : No information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing media : The product itself does not burn. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : None known.

5.2 Special hazards arising from the substance or mixture
Specific hazards during firefighting : sulfuric oxides (SOx)

5.3 Advice for firefighters
Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Further information : Prevent fire extinguishing water from contaminating surface water or
SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Personal precautions: Effective exhaust ventilation system
Avoid breathing dust.
Avoid contact with skin, eyes and clothing.
Use personal protective equipment.
Avoid dust formation.

6.2 Environmental precautions
Environmental precautions: Do not flush into surface water or sanitary sewer system.

6.3 Methods and material for containment and cleaning up
Methods for cleaning up: Use mechanical handling equipment.
Avoid dust formation.
Pick up and transfer to properly labelled containers.

6.4 Reference to other sections
For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Advice on safe handling: Avoid dust formation.
Do not breathe dust.
Avoid contact with the skin and the eyes.
Provide sufficient air exchange and/or exhaust in work rooms.
Avoid exceeding the given occupational exposure limits (see section 8).

Advice on protection against fire and explosion: No special precautions required.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Keep working clothes separately.

Dust explosion class: No data available

7.2 Conditions for safe storage, including any incompatibilities
Requirements for storage areas and containers: Store in accordance with the particular national regulations.

Further information on storage conditions: Store in tightly closed containers in a dry place.

7.3 Specific end use(s)
Specific use(s): No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Occupational Exposure Limits

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>aluminium sulfate</td>
<td>10043-01-3</td>
<td>2 mg/m3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Further information
- TWA 2 mg/m3 (Aluminium) GB EH40

Further information
Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used

8.2 Exposure controls

**Engineering measures**
Dust must be extracted directly at the point of origin.

**Personal protective equipment**

<table>
<thead>
<tr>
<th>Eye protection</th>
<th>Safety glasses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand protection Material</td>
<td>Butyl-rubber, Natural rubber, Nitrile rubber</td>
</tr>
<tr>
<td>Remarks</td>
<td>Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).</td>
</tr>
<tr>
<td>Skin and body protection</td>
<td>Protective suit</td>
</tr>
<tr>
<td>Respiratory protection</td>
<td>Avoid breathing dust. In case of insufficient ventilation, wear suitable respiratory equipment. Respiratory protective device with particle filter EN 143 - P2</td>
</tr>
</tbody>
</table>

SECTION 9: Physical and chemical properties

**9.1 Information on basic physical and chemical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>fine-grained up to lumpy, hygroscopic</td>
</tr>
<tr>
<td>Colour</td>
<td>colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>ca. 3, 10 %</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>650 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>negative</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
Aluminum sulphate, solid

Relative vapour density : Not applicable
Density : 1.7 g/cm³

Solubility(ies)
Water solubility : 629 g/l

Decomposition temperature : > 400 °C

Viscosity
Viscosity, dynamic : Not applicable
Viscosity, kinematic : Not applicable

Explosive properties : Not explosive
Oxidizing properties : not oxidizing

9.2 Other information
Dust explosion class : No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No hazards to be specially mentioned.

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
Hazardous reactions : None known.

10.4 Conditions to avoid
Conditions to avoid : > 50 °C

10.5 Incompatible materials
Materials to avoid : Metals
Bases

10.6 Hazardous decomposition products
Sulphur oxides

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Acute toxicity
Components:
Aluminiumsulfat-tetradecahydrat:
Acute oral toxicity : Remarks: No data available
Acute inhalation toxicity : Remarks: No data available
Acute dermal toxicity
Remarks: No data available

Skin corrosion/irritation
Components:
Aluminiumsulfat-tetradecahydrat:
Remarks: No data available

Serious eye damage/eye irritation
Components:
Aluminiumsulfat-tetradecahydrat:
Remarks: No data available

Respiratory or skin sensitisation
Components:
Aluminiumsulfat-tetradecahydrat:
Remarks: No data available

Germ cell mutagenicity
Components:
Aluminiumsulfat-tetradecahydrat:
Genotoxicity in vitro : Remarks: No data available
Genotoxicity in vivo : Remarks: No data available

Carcinogenicity
Components:
Aluminiumsulfat-tetradecahydrat:
Remarks: No data available

Reproductive toxicity
Components:
Aluminiumsulfat-tetradecahydrat:
Effects on fertility : Remarks: No data available
Effects on foetal development : Remarks: No data available

STOT - single exposure
Components:
Aluminiumsulfat-tetradecahydrat:
Remarks: No data available

STOT - repeated exposure
Components:
Aluminiumsulfat-tetradecahydrat:
Remarks: No data available
Aluminum sulphate, solid

Repeated dose toxicity

Components:
Aluminiumsulfat-tetradecahydrat:
Remarks: No data available

Further information

Components:
Aluminiumsulfat-tetradecahydrat:
Remarks: None known.

SECTION 12: Ecological information

12.1 Toxicity

Components:
Aluminiumsulfat-tetradecahydrat:
Toxicity to fish
: Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates
: Remarks: No data available
Toxicity to algae
: Remarks: No data available
Toxicity to bacteria
: Remarks: No data available
Toxicity to fish (Chronic toxicity)
: Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)
: Remarks: No data available
Toxicity to soil dwelling organisms
: Remarks: No data available
Plant toxicity
: Remarks: No data available
Toxicity to terrestrial organisms
: Remarks: No data available

12.2 Persistence and degradability

Components:
Aluminiumsulfat-tetradecahydrat:
Biodegradability
: Remarks: The methods for determining biodegradability are not applicable to inorganic substances.
Stability in water
: Remarks: No data available

12.3 Bioaccumulative potential

Components:
Aluminiumsulfat-tetradecahydrat:
Bioaccumulation
: Remarks: This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
12.4 Mobility in soil

Components:
Aluminiumsulfat-tetradecahydrat:
Mobility : Remarks: No data available

12.5 Results of PBT and vPvB assessment

Components:
Aluminiumsulfat-tetradecahydrat:
Assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

12.6 Other adverse effects

Components:
Aluminiumsulfat-tetradecahydrat:
Ozone-Depletion Potential : Remarks: No data available
Additional ecological information : None known.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product : In accordance with local and national regulations.

This product cannot be classified with disposal identification key acc. to the EU disposal directives as a classification results from the intended utilisation purpose of the consumer.

SECTION 14: Transport information

14.1 UN number
ADR : Not dangerous goods
IMDG : Not dangerous goods
IATA : Not dangerous goods

14.2 UN proper shipping name
ADR : Not dangerous goods
IMDG : Not dangerous goods
IATA : Not dangerous goods

14.3 Transport hazard class(es)
ADR : Not dangerous goods
IMDG : Not dangerous goods
IATA : Not dangerous goods

14.4 Packing group
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Aluminum sulphate, solid

Version 5.0 Revision Date 25.01.2018 Print Date 26.01.2018

ADR : Not dangerous goods
IMDG : Not dangerous goods
IATA : Not dangerous goods

14.5 Environmental hazards
ADR : Not dangerous goods
IMDG : Not dangerous goods
IATA : Not dangerous goods

14.6 Special precautions for user
Remarks : For personal protection see section 8.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Remarks : No data available

SECTION 15: Regulatory information
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Not applicable
Other regulations : Comply with the directives acc to the EU Maternity Protection Act (92/85/EEC) with regard to occupational restrictions.
Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical safety assessment
no

SECTION 16: Other information
Full text of other abbreviations
ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading
Aluminum sulphate, solid

Version 5.0  Revision Date 25.01.2018  Print Date 26.01.2018

Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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